

Title (en)  
SHUNT CIRCUIT FOR ELECTROSTATIC DISCHARGE PROTECTION.

Title (de)  
NEBENSCHLUSSSTROMKREIS ZUM SCHUTZ GEGEN ELEKTROSTATISCHE ENTLADUNG.

Title (fr)  
CIRCUIT EN DERIVATION DE PROTECTION CONTRE DES DECHARGES ELECTROSTATIQUES.

Publication  
**EP 0625289 A4 19950118 (EN)**

Application  
**EP 93904923 A 19930204**

Priority  
• US 9301036 W 19930204  
• US 83071592 A 19920204

Abstract (en)  
[origin: WO9315541A1] A circuit (400) is added to a complementary metal-oxide silicon integrated circuit to provide an intentional, non-reverse-biased VDD-to-VSS shunt path for transient currents such as electrostatic discharges. This circuit protects the IC from ESD damage by turning on before any other path, thus directing the ESD transient current away from easily damage structures. Specifically, the ESD transient current is steered from the VDD rail (102) to the VSS rail (101) through the on conduction of a P-channel transistor (P3) whose source and drain are connected to VDD and VSS respectively. The voltage on the gate of this transistor follows the VDD supply rail because it is driven by a delay network formed by a second transistor (P4) and a capacitor (C1). This VDD-tracking delay network turns the VDD-to-VSS transistor on during a transient and off during normal operation of the IC.

IPC 1-7  
**H02H 9/04**

IPC 8 full level  
**H01L 27/04** (2006.01); **H01L 21/822** (2006.01); **H01L 21/8234** (2006.01); **H01L 21/8238** (2006.01); **H01L 27/02** (2006.01); **H01L 27/08** (2006.01); **H01L 27/088** (2006.01); **H01L 27/092** (2006.01); **H02H 9/04** (2006.01)

CPC (source: EP US)  
**H01L 27/0248** (2013.01 - EP US)

Citation (search report)  
• [XA] EP 0435047 A2 19910703 - NAT SEMICONDUCTOR CORP [US]  
• [YA] PATENT ABSTRACTS OF JAPAN vol. 5, no. 44 (E - 50)<716> 24 March 1981 (1981-03-24)  
• [YA] PATENT ABSTRACTS OF JAPAN vol. 8, no. 81 (E - 238)<1518> 13 April 1984 (1984-04-13)  
• See references of WO 9315541A1

Designated contracting state (EPC)  
AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)  
**WO 9315541 A1 19930805**; AT E173862 T1 19981215; AU 3611593 A 19930901; DE 69322258 D1 19990107; DE 69322258 T2 19990422; EP 0625289 A1 19941123; EP 0625289 A4 19950118; EP 0625289 B1 19981125; ES 2123639 T3 19990116; JP 3275095 B2 20020415; JP H07503599 A 19950413; SG 46570 A1 19980220; US 5287241 A 19940215

DOCDB simple family (application)  
**US 9301036 W 19930204**; AT 93904923 T 19930204; AU 3611593 A 19930204; DE 69322258 T 19930204; EP 93904923 A 19930204; ES 93904923 T 19930204; JP 51352793 A 19930204; SG 1996006053 A 19930204; US 83071592 A 19920204